

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

IN THE APPLICATION OF:

VELLIYUR NOTT MALLIKARJUNA RAO      CASE NO.: CL2100USPCT  
ET. AL.

APPLICATION NO.: 10/523226      GROUP ART UNIT: 1621  
CONFIRMATION NO: 8042

FILED: AUGUST 21, 2003      EXAMINER: NAZARIO GONZALEZ,  
PORFIRIO

FOR: NICKEL - SUBSTITUTED AND MIXED NICKEL - AND COBALT -  
SUBSTITUTED CHROMIUM OXIDE COMPOSITIONS, THEIR PREPARATION,  
AND THEIR USE AS CATALYSTS AND CATALYST PRECURSORS

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

**SUPPLEMENTAL RESPONSE**

This Supplemental Response is being filed to supplement a remark contained in Applicants' Amendment dated October 8, 2008. In particular, Applicants have further considered the suggestion in that amendment that "nothing in '374 patent application publication states that the catalysts therein have crystalline  $\alpha$ -chromium oxide phases" (in the first sentence of the second paragraph under the heading "**Rejection under 35 USC 102 (e):**") in light of the mention of a  $\text{Cr}_2\text{O}_3$  eskolaite phase in the '374 patent application publication and relationship between eskolaite and  $\alpha$ -chromium oxide. Applicants have now confirmed that eskolaite can correspond the  $\alpha$ -chromium oxide, and attach hereto (1) a document listing "Aqueous chemical growth of alpha- $\text{Fe}_2\text{O}_3$ -alpha- $\text{Cr}_2\text{O}_3$  nanocomposite thin films" and "Electrochemical dissolution of immobilized alpha- $(\text{Fe}_x\text{Cr}_{1-x})_2\text{O}_3$  microparticles" which suggest by parenthetical notations an equivalence of eskolaite and  $\alpha$ -chromium oxide; (2) a document describing the chemistry and structure of eskolaite; and (3) a Newnham et al. article describing the chemistry and structure of alpha- $\text{Cr}_2\text{O}_3$ . Applicants submit that examination of the second and third documents also suggests that the eskolaite and alpha- $\text{Cr}_2\text{O}_3$  have the same chemistry and crystal structure and can therefore be considered equivalent.

Accordingly, Applicants submit that the first sentence of the second paragraph under the heading "**Rejection under 35 USC 102 (e):**") might more suitably read "Applicants

submit that nothing in '374 patent application publication states that the catalysts therein have crystalline  $\alpha$ -chromium oxide phases wherein a significant proportion of the chromium atoms in the  $\alpha$ -chromium oxide lattice are substituted with a nickel atoms." Indeed, Applicants note again that paragraph [104] clearly indicates that the  $\text{Co}_{0.2}\text{Cr}_{0.8}\text{O}_x$  catalysts therein comprise a mixture of  $\text{CoCr}_2\text{O}_4$  cubic spinel phase and a  $\text{Cr}_2\text{O}_3$  eskolaite phase and further suggests that after use, Co metal may be formed. In other words, Applicants submit that this still clearly indicates that for this cobalt analog of the nickel-containing composition cited in the Office action, the cobalt-containing phase is separate from the eskolaite phase. In contrast, Claim 1 clearly involves crystalline alpha-chromium oxide where chromium atoms in the alpha-chromium oxide lattice are substituted by nickel or both nickel and trivalent cobalt (i.e., this cobalt and/or nickel substitution is part of the "eskolaite" phase).

Respectfully submitted,

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